

**REMARKS**

Applicants respectfully request reconsideration of the present application in view of the foregoing amendments and in view of the reasons that follow. Claims 1-25 have been canceled. Claims 26-53 have been added. Claims 26-53 are pending in this application.

**I. Amendments to the Claims**

As indicated above, Claims 1-25 have been canceled and Claims 26-53 have been newly added. Support for Claims 26-53 can be found throughout the specification, specifically in paragraphs [0019], [0023]-[0032], [0039]-[0047], and [0051]-[0053], and throughout the original claims. Applicants respectfully submit that no new matter has been added to the application. Applicants also respectfully submit that the newly added claims do not necessitate a new search by the Examiner.

**II. Claim Rejections Under 35 U.S.C. § 112**

On page 2 of the Office Action, Claims 17-21 were rejected under 35 U.S.C. § 112, first paragraph, as failing to comply with the enablement requirement. Specifically, the Examiner asserted that a “single means claim, i.e., where a means recitation does not appear in combination with another recited element of means, is subject to an undue breadth rejection.” In addition, on page 2 of the Office Action, Claims 24 and 25 were rejected under 35 U.S.C. § 112, second paragraph, as being incomplete for omitting essential elements, such omission amounting to a gap between the elements. Claims 17-21, 24, and 25 have been canceled. As such, Applicants respectfully submit that the rejections under 35 U.S.C. § 112 are moot.

**III. Claim Rejections Under 35 U.S.C. § 101**

On page 3 of the Office Action, Claims 1-14, 22, and 23 were rejected under 35 U.S.C. § 101 as allegedly directed to non-statutory subject matter. Claims 1-14, 22, and 23 have been canceled. As such, Applicants respectfully submit that the rejection under 35 U.S.C. § 101 is moot.

**IV. Claim Rejections Under 35 U.S.C. § 102**

On page 4 of the Office Action, Claims 1, 3-8, 10, 11, 13, and 15-22 were rejected under 35 U.S.C. § 102(e) as being anticipated by U.S. Patent No. 6,560,445 to Fette *et al.* (*Fette*). Claims 1, 3-8, 10, 11, 13, and 15-22 have been canceled rendering their rejection moot.

**V. Claim Rejections Under U.S.C. § 103**

On page 6 of the Office Action, Claims 2, 9, 12, 14, and 23-25 were rejected under 35 U.S.C. § 103(a) as being unpatentable over *Fette* in view of Dabak *et al.*, “Signal Constellations for Non-Gaussian Communication Problems”, Statistical Signal and Array Processing, Minneapolis, April 27-30 1993, Proceedings of the International Conference on Acoustics, Speech, and Signal Processing (ICASSP), New York, IEEE, US, Vol. 4, pages 33-36 (*Dabak*). Claims 2, 9, 12, 14, and 23-25 have been canceled rendering their rejection moot.

**VI. Double Patenting Rejection**

On page 8 of the Office Action, Claims 1, 2, 7, and 9-25 were provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 41, 42, 45, 49, 50, and 57-58 of co-pending U.S. Patent Application No. 10/671,346. Applicants respectfully submit that because co-pending U.S. Patent Application No. 10/671,346 has not yet issued and the Examiner has not allowed the claims in the present application, no further action in response to this provisional double patenting rejection is required at this time.

**VI. New Claims 26-53**

New Claims 26-53 have been added in place of canceled Claims 1-25. Applicants respectfully submit that Claim 26-53 are in condition for allowance and, for at least the following reasons, are patentable over *Fette* and *Dabak*.

Independent Claim 26 recites “selecting a signal constellation **based on a channel state information.**” (Emphasis added). Independent Claims 35, 46, 47, 49, 51, and 53 recites a similar feature. Applicants respectfully submit that *Fette* and *Dabak*, alone and in combination, fail to teach, suggest, or describe at least the feature.

*Fette* discloses:

A transmitter (1001T) modulates information onto a plurality of carrier signals transmitted simultaneously over a corresponding plurality of frequencies using cepstral modulation. A receiver (1003R) receives the plurality of carrier signals and demodulates the signals utilizing cepstral demodulation. Receiver (1003R) monitors the carrier signals and in response to predetermined conditions selects a cepstral constellation to be utilized. Receiver (1003R) provides the cepstral constellation information to a transmitter (1003T) that, in turn, transmits the cepstral constellation information to transmitter (1001T). Transmitter (1001T) utilizes the selected cepstral constellation information to modulate the next transmission of the plurality of carrier signals.

(Abstract). On page 2 of the Office Action, the Examiner seems to focus on the utilization of the “signal to noise ratio” in *Fette* in asserting that *Fette* anticipates several of the original claims. Specifically, the Examiner asserts that “*Fette* discloses a method of establishing a space-time constellation. The signal to noise ratio (SNR) of each coefficient is used to determine the constellation that will be used for transmission (column 8, lines 20-51).”

However, *Fette* fails to disclose “selecting a signal constellation **based on a channel state information**” as recited in Claims 26, 35, 46, 47, and 49 or “selecting a point from a signal constellation at a selection module **based on a channel state information**” as recited in Claims 51 and 53. (Emphasis added). Instead, *Fette* teaches selecting a constellation based on a signal-to-ratio. Column 9, lines 3-11 of *Fette* states:

SNR is measured, and a constellation is chosen to provide the optimum performance either by a predetermined correlation of constellations and SNR or by trying different constellations to obtain best performance. In either case, the communication system **selects a coefficient constellation based upon SNR.** In other words a constellation strategy is selected from available constellation strategies to be effected least by interference.

(Emphasis added). In fact, *Fette* fails to disclose “a channel state information” at all.

*Dabak* is directed toward a “procedure for determining optimum signal sets.” (Abstract). *Dabak* states that “[f]or small M, we can calculate optimal signal sets by maximizing the sum of all intersignal distance measures under a signal-related constraint.” (Page 34, Section 3). *Dabak* further states that “we generated optimum constrained-energy,

ternary (M=3) signal sets for Gaussian and Laplacian noise cases by maximizing the sum of Kullback information measures between all distinct pairs in the signal set subject to an equal energy constraint.” (Page 35). However, *Dabak* also fails to disclose “selecting a signal constellation **based on a channel state information**” as recited in Claims 26, 35, 46, 47, and 49 or “selecting a point from a signal constellation at a selection module **based on a channel state information**” as recited in Claims 51 and 53. (Emphasis added).

For at least these reasons, Applicants respectfully submit that independent Claims 26, 35, 46, 47, 49, 51, and 53 are in condition for allowance. The remaining claims depend from one of Claims 26, 35, 47, 49, and 51. As a result, Applicants respectfully submit that Claims 26-53 are in condition for allowance.

Applicants believe that the present application is in condition for allowance. Favorable reconsideration of the application as amended is respectfully requested.

The Examiner is invited to contact the undersigned by telephone if it is felt that a telephone interview would advance the prosecution of the present application.

The Commissioner is hereby authorized to charge any additional fees which may be required regarding this application under 37 C.F.R. §§ 1.16-1.17, or credit any overpayment, to Deposit Account No. 19-0741. Should no proper payment be enclosed herewith, as by the credit card payment instructions in EFS-Web being incorrect or absent, resulting in a rejected or incorrect credit card transaction, the Commissioner is authorized to charge the unpaid amount to Deposit Account No. 19-0741. If any extensions of time are needed for timely acceptance of papers submitted herewith, Applicants hereby petition for such extension under 37 C.F.R. §1.136 and authorizes payment of any such extensions fees to Deposit Account No. 19-0741.

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Respectfully submitted,

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